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PATENT AND TECHNICAL TRANSLATION

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DECLARATION

The undersigned, Olaf Bexhoeft, hereby states that he is well acquainted with both the English and German languages and that the attached is a true translation to the best of his knowledge and ability of the German text of PCT/EP2004/051188, filed 06/22/2004, and published on 01/27/2005 as WO 2005/007405 A2, and of twenty-four (24) amended claims.

The undersigned further declares that the above statement is true; and further, that this statement was made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or document or any patent resulting therefrom.

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Specification

Device and Methods for Raising and/or Lowering a Printing Form

The invention relates to devices and methods for drawing-on and/or removing a printing forme in accordance with claim 1 or 4 or 22, 27 or 28.

A plate changing device is known from EP 1 084 839 A1, which has a pivotable magazine with a feed chute and a receiving chute, a pivotable guidance device, as well as a contact roller, which can be brought in or out of contact. Each chute has a carriage with a hook, by means of which the printing forme to be removed is maintained in a one-sided positive contact and is pulled into the chute, or guided toward the cylinder. The path of the printing forme between the cylinder and the respective magazine chute is determined by pivoting the guidance device.

It is the object of the invention to create methods and devices for drawing-on and/or removing a printing forme.

In accordance with the invention, the object is attained by means of the characteristics of claim 1 or 4 or 22, 27 or 28.

A substantial advantage which can be achieved by means of the invention consists in that a rapid and dependable system for drawing-on and/or removing a printing forme is created with the least possible outlay.

By means of the advantageous embodiment as a two-part system with a semi-automatic device and a magazine, it is

possible to select the degree of automation as a function of the requirements.

Because of the - in particular frictional, or positive on both sides, connection - the employment is freely possible in connection with lower or upper printing groups of identical design, without taking gravity into consideration. Here, an effective connection on both sides is to be understood as a connection stressed for tension and traction in regard to the conveying direction in the longitudinal direction of the chute.

In comparison with two carriages with two drive mechanisms, the employment of only one movable carriage for the feeding, as well as the receiving chute, lowers the costs, the maintenance outlay and the chance of a breakdown.

In contrast to a positive connection, a frictional connection between the holding means and the printing forme makes possible in a simple manner the use of printing forms of various formats, without a fresh adjustment and/or additional recesses, hooks, stops or the like being required. The rear end of the magazine embodied in the form of an open quiver is of particular advantage in view of printing formes of different lengths.

A movable flap arranged directly on the magazine for selecting the chute and/or the guidance of the printing forme reduces the outlay in comparison with an otherwise additional device to be provided, and simultaneously always assures a correct relative position between the magazine chute and the flap.

Exemplary embodiments of the invention are represented in the drawings and will be described in greater detail in what follows.

Shown are in:

Fig. 1, an overview of a printing press,

Fig. 2, a schematic representation of webs of different width,

Fig. 3, a printing unit,

Fig. 4, a first embodiment of a semi-automatic device with associated magazine,

Fig. 5, a pivotable embodiment of the semi-automatic device,

Fig. 6, a longitudinal section through the magazine in Fig. 4,

Fig. 7, schematic representations of method steps a to p during the application or removal of plates,

Fig. 8, a simplified representation of a beveled-off printing forme,

Fig. 9, a schematic representation of a clamping and/or gripping device.

A printing press, in particular a web-fed rotary printing press for imprinting one or several webs B, has several units 100, 200, 300, 400, 500, 600, 700, 800, 900 for provisioning, imprinting and further processing. For example, the web B to be imprinted, in particular a paper web B, is wound off a roll unwinding device 100 before it is supplied via a draw-in unit 200 to one or several printing units 300. In addition to the printing units 300, which are standardized for multi-color printing (for example four of

them for four-color printing), it is possible to provide further printing units 300, which in this case can be utilized in alternation with one or several of the remaining printing units for flying printing forme changes, fir example.

In an advantageous embodiment a varnishing unit 400 can be provided in the web path.

Following imprinting and, if required, varnishing, the web B passes through a dryer 500 and is possibly cooled again in a cooling unit 600, if drying is performed thermally. A further conditioning unit such as, for example, a coating device and/or re-moistening device, not represented in Fig. 1, can be provided downstream of the dryer 500 in or downstream of the cooling unit 600. Following cooling and/or conditioning, the web B can be supplied via a superstructure 700 to a folding apparatus 800. The superstructure 700 has at least one silicon unit, longitudinal cutter and turning device, as well as a hopper unit, not represented in Fig. 1. The mentioned silicon unit can also be arranged upstream of the superstructure 700, for example in the area of the cooling unit 600. Furthermore, the superstructure can have, not represented in Fig. 1, a perforating unit, a gluing unit, a numbering unit and/or a plow folder. After passage through the superstructure 700, the web B, or partial webs, are conducted into a folding apparatus 800.

In an advantageous embodiment the printing press in addition has a separate transverse cutter 900, for example a so-called plano delivery device 900, in which a web B which, for example, had not been conducted through the folding

apparatus 800, is cut into standard sheets and, if desired, stacked or delivered.

The units 100, 200, 300, 400, 500, 600, 700, 800, 900 of the printing press have an effective width transversely in respect to the transport direction T of the web B, which permits processing of webs B of a maximum width b (Fig. 2) of, for example, up to 1,000 mm. Here, the effective width is understood to be the respective width, or clear width, of the structural components (for example, rollers, cylinders, passages, sensor devices, actuating paths, etc.) of the units 100, 200, 300, 400, 500, 600, 700, 800, 900, which work together with the web B directly or indirectly, so that the web B can be processed, conditioned and conveyed in its full width b. The functionality (material supply, web transportation, sensor devices, further processing devices) of the units 100, 200, 300, 400, 500, 600, 700, 800, 900 is designed in such a way that webs B' of only partial width down to a width b' of only 400 mm can be processed in the printing press.

The units 100, 200, 300, 400, 500, 600, 700, 800, 900 which define, or process, a section length a, are designed in such a way that for example they define a section a of a length between 540 and 700 mm on the web B. The section length a advantageously lies between 540 and 630 mm. In a special embodiment the section length a lies at 620 ± 10 mm. In a further development of the printing press the units 100, 200, 300, 400, 500, 600, 700, 800, 900 are designed in such a way that with a few changes the printing press can be selectively designed with section lengths of 546 mm, 578 mm,

590 mm or 620 mm. Thus, for example, substantially only an exchange capability of bearing elements for printing group cylinders (see below), a matching of the drive mechanism (see below), as well as matching in the folding apparatus 800 or the transverse cutter 900 (see below), are required for the change in order to equip the same printing press for formats which differ from each other. For example, in a standard way the section length a is covered by four vertical printed pages, for example DIN A4, side-by-side in the transverse direction of the web B, and two printed pages (for example of a length s) one behind the other in the longitudinal direction. However, depending on the print image and the subsequent further processing in the superstructure 700 and the folding apparatus 800, other numbers of pages per section length a are also possible.

For multi-color imprinting of the web B, B', the printing press has several, for example at least four, here in particular five identically equipped printing units 300. The printing units 300 are preferably arranged one next to the other, and a web B, B' passes horizontally through them. The printing unit 300 is preferably designed as a printing unit 300 for offset printing, in particular as a double printing group 300, or as an I-printing group 300, with two printing groups 301, for example two offset printing groups 301 for two-sided printing by means of the so-called rubber-against-rubber process. Rollers 302 are arranged upstream and downstream at least in the lower area, and optionally in the upper area, of at least one of the printing units 300, by means of which an incoming web B, B' can be conducted around above or below the printing unit 300, or a web B, B'

conducted around an upstream located printing unit 300 can be passed through the printing unit 300, or a web B, B' passed through the printing unit 300 can be conducted around the downstream located printing unit 300.

Fig. 3 schematically shows the arrangement of two printing groups 301 working together via the web B, B', each with printing cylinders 303, 304 embodied as transfer cylinder 303 and forme cylinder 304, an inking system 305 and a dampening system 306. In an advantageous embodiment, per forme cylinder 304 the printing unit 300 has devices 307 for semi- or fully-automatic plate feeding 401, or changing of a printing forme 405 (see below in connection with Fig. 4 et seq.).

In a further embodiment, in particular if the printing press is intended to be suitable for imprinting operations, at least one or several printing units 300 have additional guide elements 308 closely ahead of and behind the nip point of the printing unit 300. If a web B, B' is to pass through the printing unit 300 without being imprinted and without contact between the web B. B' and the transfer cylinders 303, the web guidance with the use of the guide elements 308, shown in dashed lines in Fig. 3, is advantageous. The web B, B' passes through the nip point in such a way that it substantially forms an angle between 80° and 100°, preferably approximately 90°, with a connecting line of the axes of rotation of the two transfer cylinders 303. Preferably the guide elements 308 are designed as rods or rollers, around which air flows. This reduces the danger of previously freshly applied ink rubbing off.

In a further development of the represented printing group 301, a washing device 434 is assigned to each transfer cylinder 303. The elastic surface of the transfer cylinder 303 can be cleaned by means of the washing device 434.

Each of the cylinders 303, 304 has a circumference between 540 and 700 mm, wherein preferably the forme and the transfer cylinder 303, 304 have the same circumference. In an advantageous manner the circumferences lies between 540 and 630 mm. In a special embodiment the section length a lies at 620 ± 10 mm. In a further development, the printing unit 300 is designed in such a way that, with a few changes, the cylinders 303, 304 can be selectively designed with circumferences of 546 mm, 578 mm, 590 mm or 620 mm. Thus, for example, substantially only an exchange of bearing elements 308 or a changed position of the bores in the lateral frame (and the lug, see below) for the cylinders 303, 304, and a matching of the drive mechanism (lever, see below) takes place.

Besides an ink feeding device, for example an ink fountain 311 with an actuating device 312 for regulating the ink flow, the inking system 305 has a plurality of rollers 313 to 325. The ink-conducting device can also be designed as a doctor blade crosspiece. With the rollers 313 to 325 placed against each other, the ink moves from the ink fountain 311 via the duct roller 313, the film roller 314 and a first inking roller 315 to a first distribution roller 316. Depending on the mode of operation of the inking system 305 (see below), from there the ink moves via at least one inking roller 317 to 320 to at least one further distribution

cylinder 321, 324, and from there via at least one application roller 322, 323, 325 to the surface of the forme cylinder 304. In an advantageous embodiment the ink moves from the first distribution cylinder 316 over several possible paths selectively or simultaneously (in series or parallel) via two further distribution cylinders 321, 324 to the application rollers 322, 323, 325. In an advantageous embodiment of the inking and dampening systems 305, 306, the second distribution cylinder 324 can work together at the same time with a roller 328, for example an application roller 328, of the dampening system 306.

The roller 328 works together with a further roller 329 of the dampening system 306, for example a distribution roller 329, in particular a traversing chromium roller 329. The chromium roller 329 receives the dampening agent from a moistening arrangement, for example a roller 330, in particular a dipping roller 330, which dips into a dampening agent supply 332, for example a water fountain. A drip pan 335 is preferably arranged underneath the water fountain for catching condensation water forming on the water fountain which, in an advantageous embodiment, is designed to be heatable, for example by means of a heating spiral.

In a further development, besides the rollers 313 to 325 the inking system 305 has at least one further roller 326, by means of which ink can be taken from the inking system 305 in the ink path, in particular upstream of the first distribution cylinder 316. This takes place in that an appropriate removal device 333 (Fig. 3) can be placed against this roller 326 itself or, as shown, against a roller 327 working together with it.

In an advantageous further development, in its inlet area, or in the area of its inlet nip between the two transfer cylinders 303, the printing unit 300 has a device 336 for affecting the fan-out effect, i.e. for affecting a change in the transverse extension/width of the web B, B' from one print location to the other, caused by the printing process (in particular moisture). The device 336 is preferably arranged in the inlet area of a printing unit 300 following the first printing unit 300, i.e. when the web B, B' has been imprinted at least once. It has at least an actuating member, for example a support element, by means of which the web B, B' can be deflected into a direction perpendicularly in respect to the web level, either by contact with the web B, B', or advantageously without contact.

As indicated in Fig. 3, in an advantageous embodiment the printing group 301 respectively has a device 401 for the - at least semi-automatic - changing of a printing forme 405 on the assigned forme cylinder 304. The device 401 is designed in two parts and has a contact pressure device 402, also called "semi-automatic changer" or "semi-automatic device" 402, arranged in the area of a nip point between the transfer and forme cylinders 303, 304, and a storage device 43, structurally separated from it, for example a magazine 403, with feeding and receiving devices for the printing formes 405 (Fig. 4 et. seq.).

The printing forme 405 extends - regardless of the presence of a device 401 for aiding the printing forme change substantially across the entire width to be imprinted of the web B, B', and substantially (except for a joint or a channel

opening) over the entire circumference of the forme cylinder 304, and has the corresponding dimensions. The semi-automatic changer 402, as well as the magazine 403, if provided, are dimensioned in the axial extension for receiving printing formes 405 of a width of a web B, B', which is to be imprinted as a whole.

The printing group 301 has at least one semi-automatic changer 402. In a first embodiment, a roller 406 for the semi-automatic changer 402 (Fig. 4) is movably arranged, for example resiliently, on a cross beam 404 fixed in place on the frame, which roll can be placed into contact by means of a drive mechanism 407 (actuating means 407), for example a hollow body (hose) 407, which can be charged with a pressure medium, in the direction of the shell face of the cylinder 304 (for example against a spring force), or out of contact (for example upon release). In addition, a protective device 408, which can also be brought into and out of contact, seated on the cross beam 404, rotatable around a rotation point D408, can be placed into contact by means of a drive mechanism 409 (actuating means 409), for example a hollow body (hose) 409, which can be charged with a pressure medium, in the direction of the shell face of the cylinder 304 (for example against a spring force), or out of contact (for example upon release). As can be seen in Fig. 5, a plurality (here ten) of rollers 406 are seated axially side-by-side, each on respective spring elements 430, in particular spring steel sheets 430. These can preferably be actuated all together or in groups by means of a common drive mechanism 407.

In a second embodiment of the semi-automatic changer 402 (Fig. 5), the semi-automatic changer 402, or the cross beam 404 with the roller 406, is not fixed in place, but is arranged in the frame, pivotable around a pivot axis S402, which is spaced apart from the axis of rotation of the roller 406, but extends substantially parallel in respect to the axis of rotation of the forme cylinder 304. A drive mechanism 431, for example a cylinder 431 which can be charged with a pressure medium, is provided for the pivot movement and is, for example, hinged with one end on the lateral frame, not represented, and with the other end on the semi-automatic changer 402 (for example the cross beam 404, or a lever arm connected therewith) eccentrically in respect to the pivot axis S402. The pivotable cross beam 404, or the semi-automatic changer 402, can be pivotably seated directly on the lateral frame or, as represented in Fig. 5, by means of a holder 432 appropriately connected with the lateral frame. Advantageously, the holder 432 can be seated on the lateral frame, or on a bearing block 435 arranged on the lateral frame, adjustable in a direction perpendicularly in relation to the pivot axis S402.

The movement of the roller 406 into and out of contact can take place in the manner of the first embodiment by means of a drive mechanism 407, for example a hollow body 407 which can be charged with a pressure medium, and a spring force, if desired in an embodiment with an additional protective device 408.

In an alternative solution, the pivot axis S402 has been selected in such a way that the roller 406, which is

fixedly, but if desired resiliently seated, can be brought into or out of contact by pivoting the cross beam 404 alone. In that case an additional driving of the roller 406 (drive mechanisms 407) can be omitted.

It is possible in principle to attach a printing plate 405 in a semi-automatic manner by means of the described semi-automatic changer 402 - in the first or the second embodiment -. To this end, in the first embodiment a printing forme 405 to be drawn-on is manually introduced into the space between the roller 406 and the forme cylinder 304 and initially remains there loosely clamped. Thereafter the roller 403 is brought into contact with it and the cylinder 304 is rotated (here in a clockwise direction). The leading end of the printing forme 405 (beveled by 40° to 50°, in particular by an intermediate angle α of approximately 45°, see Fig. 8) snaps into an opening 411 (see Figs. 4 and 9) of a clamping and/or gripping channel, which extends axially in the forme cylinder 304 over at least the usable width; the printing forme 405 is wound around the cylinder 304 by rotating the latter until the trailing edge, beveled in particular by an intermediate angle ß of approximately 90°, is also pushed into the channel by the roller 406. Thereafter a possibly provided, symbolically indicated arresting, clamping and/or gripping device 410 is activated (for details regarding the clamping and/or gripping device 410 see Fig. 9). Plate removal takes place accordingly in the reverse sequence, the pushed-out printing forme 405 can be manually removed from the space between the roller 406 and the cylinder 304. In the area of the shell face, the opening 411 to the channel preferably has a width of 1 to 5 mm in the

circumferential direction of the cylinder 304, in particular less than or equal to 3 mm. The clamping device 410 is advantageously pneumatically operable, for example embodied in the form of one or several pneumatically actuable levers 442, which in the closed state are prestressed against the trailing end 441 (for example beveled by approximately 90°) extending into the channel. Preferably a hose 444 (Fig. 9), which can be charged with a pressure medium, can be used as the actuating means 444. The hose 444 is supplied with a pressure medium through a feed 445. A channel wall, acting together with the leading end 439, forms a nose-shaped intermediate angle α' with the shell face, which substantially corresponds to the one of the bevel of the leading end 439. The same applies to the intermediate angle ß' in the area of the opposite wall and the angle ß of approximately 90° of the beveled trailing end 441.

In connection with the second embodiment, the attachment or the removal takes place in principle in the same steps, however, at the time during removal in which the leading end 439 is to snap out of the channel of the clamping device 410, the semi-automatic device 402 is in the meantime moved from its normal position into the end position, where it is farther removed from the cylinder 304.

However, in a preferred embodiment, the feeding or the removal of the printing forme 405 takes place automatically by means of the magazine 403, which is structurally separate from the semi-automatic changer 402. The second embodiment of the semi-automatic device 402 is preferably employed in connection with the second embodiment of the magazine 403 described below. The first embodiment of the magazine 403 is

advantageous for the first embodiment of the semi-automatic device 402. As can be seen in Fig. 4, the magazine 403 is seated, pivotable around a pivot point D403 in respect to the lateral frame.

In a first embodiment of the magazine 403 a roller 412 is pivotable around a pivot axis extending parallel with the cylinder axis, is seated on the magazine 403, where it can be driven by a drive mechanism 413. In the course of drawing-on a fresh printing form 405, the roller 412 is used for bending the printing forme 405 in such a way that prestress of the leading end 439 against the shell face of the cylinder 304 results.

In a second embodiment of the magazine 403, however, it does not have the above mentioned roller 412 and the drive mechanism 413 (not explicitly represented). For this reason the magazine 403 in accordance with the first embodiment is represented with the roller 412 and the drive mechanism 413, wherein the subsequent description, aside from the roller 412 and the drive mechanism 413, is to be applied to the first, as well as the second embodiment.

On a side of the magazine 403 facing the nip point of the two cylinders 303, 304, a flap 414 is seated movable, for example, around a pivot axis extending parallel with the cylinder axis, and is advantageously driven by a drive mechanism 416, for example a cylinder which can be charged with a pressure medium. The flap 41 is used for opening or closing a chute 417 visible in Fig. 6, for example a feeding chute 417 for printing formes 405 to be freshly attached. With the feeding chute 417 closed, the path to the nip point is blocked for a freshly to be attached printing forme 405,

and the path for a printing forme 405 to be removed - in the first embodiment past the roller 412 - in a chute 418, for example the receiving chute 418, is free (both positions indicated in Fig. 6). For transporting the printing formes 405, a transport means 419, for example a carriage 419, is arranged in the interior of the magazine 403 and is movable in a longitudinal direction in relation to the chutes 417, 418. It has a holding means 421, for example a clamping device 421, on a side working together with the printing forme 405 to be freshly applied, and holding means 422, for example a clamping device 422, on the side working together with the printing forme 405 to be removed. Here, the carriage 419 is designed in one piece (possibly consisting of several connected pieces) and to serve both chutes 417, 418, wherein the carriage 419 encloses at least the one chute 418, forming a passage, or passage opening 425, for the removed printing formes 405. The carriage 419 preferably extends around both chutes 417, 418, wherein the respective clamping device 421, 422 is provided on one chute side, and the opposite side of the carriage passage is used as counter-support. For example, the clamping devices 421, 422 are designed as hollow bodies or cylinders, which can be actuated by a pressure medium and are embodied either to be actively clamping, or to be self-locking (for example operating against a spring mechanism).

A feeler 420 is preferably arranged in the area of the flap 414 in such a way that it registers the position of a fresh printing forme 405 in the chute 417 when the flap 414 is closed, so that in this way a correct position is assured.

Preferably the feeler 420 is designed as an inductive feeler 420.

The carriage 419, which supports the clamping devices 421, 422 and, if required, brushes 413, is driven by a drive mechanism 424, for example an electric motor 424. This takes place, for example, by means of a belt drive 426. In principle the carriage 419 can also be driven by means of a drive mechanism 424 designed as a cylinder which can be operated by a pressure medium. A rear end section 427 facing away from the cylinder 304 is preferably designed to be open, at least in the area of the chutes 417 and 418. In this way printing formes 405 of different formats for printing presses of different formats can be handled in spite of the identical structure of the magazine 403. One or several further holding means 428, 429, for example clamping devices 428, 429, per chute 417, 418 can be advantageously provided in the end area 427, which maintain the respective printing formes 405 in a prepared storage position (prior to attachment or following removal) in the magazine 403. Such a holding means 428, which is fixed in place in respect to the storage device 403, should be provided for at least one of the chutes 417, 418, in particular the receiving chute 418. The clamping devices 428, 429 are fixed on the frame of the magazine 403, while the above mentioned clamping devices 421, 422 are assigned to the movable carriage 419 and are connected with it.

The holding means 421, 422, 428, 429 can also be designed differently than represented wherein, however, preferably all, but at least the holding means 421, 422

assigned to the carriage 419, are designed as connections which are effective on both sides. If desired, this can be, besides the frictional connection represented, also a positively connected connection, effective on both sides. Here, a connection effective on both sides should be understood to be a connection which can be stressed for tension and traction in regard to the conveying direction in the longitudinal direction of the chute.

The actions, or method steps in the magazine 403 during removal or installation are schematically represented in the following Figs. 7a to 7p. For reasons of clarity, the reference numerals will be used only in the first figures. In the representations in Fig. 7, the chutes 417 and 418 with the associated clamping devices 421, 422, 428, 429 are reversed by way of example in respect to the representation in Fig. 6. Although it is possible in principle to design the chute 417 to be always at the top and the chute 418 always at the bottom, or vice versa, it is practical for the feeding chute 417 to be arranged on the side of the magazine 403 closer to the web B, B', so that with an upper printing group 301 the feeding chute 417 is arranged to lie on the bottom, and with a lower printing group 301 the feeding chute 471 is arranged to lie on the top.

Fig. 7a shows the magazine 403 in the initial position, i.e. there is no printing forme 405 in one of the chutes 417, 418, the clamping devices 421, 422, 428, 429 are disengaged, i.e. they release the respective chutes 417, 418 and are for example in a position of rest. Furthermore, the flap 414 is in a position in which the feeding chute 417 is closed and the receiving chute 418 is open. The carriage 419 is in a

rear position, its position of rest. Now a printing forme 405 is introduced into the feeding chute 417 (Fig. 7b) until it comes to rest, for example, against a stop 415, and is subsequently secured by the clamping device 429 which is fixed on the frame (Fig. 7c). Securing can take place automatically or under the condition that a feeler 420 recognizing the leading edge (for example in the area of the stop 415, but only represented in Fig. 7d) registers the correctly positioned fresh printing plate 405. Now the magazine 403 is ready for a possibly subsequent placement on an "empty" cylinder 304, which would be continued with the clamping of the fresh printing plate 405 in accordance with Fig. 7i (but without releasing an old printing plate 405 from the carriage 419).

However, if a plate change is to be performed, or only an old printing plate 405 is to be removed, the steps in accordance with Fig. 7d, inclusive of Fig. 7h, are required, possibly with the step for releasing the old printing plate 405 from the carriage 419 in Fig. 7i.

It is not shown in Fig. 7d that for plate removal first the roller 406 represented in Figs. 4 and 5 is placed by the drive mechanism 407 against the printing plate 405 still on the cylinder 304, and subsequently the possibly provided arresting, clamping or gripping device 410 for the trailing end of the printing plate 405 is released, so that in the course of rotating the cylinder 304 in the direction opposite the production the end can escape from the channel. The printing plate 405 is now released by the rotation of the cylinder 304, guided by the roller 406, or at this point still pressed against the shell face by it, step by step from

the cylinder 304 because of its inherent tension, and is pushed into the chute 418 by the rotation of the cylinder 304 (Fig. 7d). In the process the two clamping devices 422, 428 assigned to the chute 418 are inactive.

The carriage 419 is either already in a position close to the cylinder or, as represented in Fig. 7e in comparison with Fig. 7d, moved there. In a phase in which the printing forme 405 has been unwound to a large degree and the leading end 439 is almost or already underneath the roller 406, the roller 406 is moved away from the cylinder 304 so that, following the release of the clamping device 410 and further rotation of the cylinder 304, the leading end 439 can spring out of the channel.

For simplifying the release of the leading end 439 of the printing plate 405 from the channel of the arresting, clamping or gripping device 410, in an advantageous method step the printing plate 405 is bent in a suitable manner in an end phase of its unwinding in a first variation by pivoting the roller 412 in accordance with Fig. 4. In this way the leading end 439 is provided with a torque because of the bending of the printing plate 405 in order to be able to escape in a simpler way from the channel in the course of the further rotation of the cylinder 304. As represented by way of example in Fig. 7f, bending can also take place by resetting the flap 414, in which case a roller 412 and its drive mechanism 413 to be especially provided can be omitted.

In another variation, the semi-automatic device 404, which in accordance with Fig. 5 is pivotable, is in this state moved into a position so that the roller 406 (drive mechanism 407 deactivated), which had already been disengaged

shortly before this, is even further removed from the cylinder 304. In this way the leading end 439 is provided with sufficient space for escaping more easily from the channel in the course of further rotation of the cylinder 304.

If now the leading end 439 of the printing plate 405 has also been removed from the channel of the arresting device, the printing plate 405 can no longer be conveyed by rotating the cylinder 304. As represented in Fig. 7f, the printing plate 405 to be removed is clamped by the clamping device 422 of the carriage 419, which is in the forward position, and is pulled completely into the receiving chute 418 of the magazine 403 by moving the carriage 419 into a rear position (Fig. 7g).

After releasing the front edge of the plate from the channel of the arresting device, the roller 412 of the one variation, or the pivotable semi-automatic device 402 of the other variation, can be returned into its normal position.

By means of subsequent clamping of the printing plate 405 by means of the clamping device 428 fixed on the frame, it is secured in a parked position until removal by the operators or a device provided for this (Fig. 7h), it is thereafter possible, as can be seen in Fig. 7i, to release the clamping device 422 assigned to the carriage 419. With this, the step of releasing an "old" printing plate is finished, except for removal from the chute 418. For removing the old printing plate 405 at this or a later time it is merely necessary to release the clamping device 428 and to remove the printing plate 405 through the preferably open rear end of the magazine 403.

In the case of attaching plates during a plate change, or the use of a fresh printing plate 405 at the start of production, the steps described below follow the above mentioned steps in Figs. 7a to 7c. The fresh printing plate 405 is clamped to the carriage 419, which is in its rear position (Fig. 7i, second part) by means of the clamping device 421 assigned to the carriage 419 in the area of the feeding chute 417, and thereupon clamping is released by means of the clamping device 429, which is fixed on the frame (Fig. 7k). If the flap 414 still is in the position in which it closes the feeding chute 417, it is opened by actuating the drive mechanism 416. By moving the carriage 419 into a forward position, the fresh printing plate 405 is moved out of the chute 417 to the cylinder 304 (Fig. 7l). By activating the drive mechanism 407, the roller 406 is placed against the cylinder 304 before the printing plate 405 reaches its shell face. The roller 406 is used as a stop for the leading end 439 of the printing forme 405, in the course of which it rotates together with the cylinder 304 now turning in the production direction by means of friction in such a way that the leading end 439 experiences a force in the direction of the shell face of the cylinder because of friction at the roller surface. When, because of the rotation of the cylinder 304, the channel of the clamping and/or gripping device 410 passes underneath the leading end 439 of the printing plate 405 touching the roller 406, the end is pushed into the channel, aided by the roller 406 and its rotating movement. Preferably the plate 405 is not released by the clamping device 421 of the magazine 403 immediately after the leading end snaps in, but is, as shown

in Fig. 7m, still held by the clamping device 421 until it has been partially drawn on.

While the printing plate 405 is further drawn on by the rotation of the cylinder 304, the clamping by the clamping device 421 is released (Fig. 7n). The roller 406 remains placed against the printing plate 405 during the entire process of drawing it on, and finally pushes the trailing end 441 into the channel. Following arresting in the channel, the roller 406 is brought out of contact, i.e. the pressure medium is deactivated. After the release of the clamping device 421 of the magazine 403, the carriage 419 is preferably moved back into its position of rest, i.e. its rear position, Fig. 7o. As already mentioned above, in case of a plate change it is now possible to remove the old printing plate 405 after the clamping device 428 has been released, Fig. 7p. Now both chutes 417, 418 are empty, the carriage 419 is in its initial position. To this end the flap 414 is placed into the position, if required, in which the receiving chute 418 is opened for a printing plate 405 to be installed.

On its circumference, the transfer cylinder 303 has at least one dressing 436, indicated in Fig. 4, which is maintained in at least one channel extending axially on the shell face. The transfer cylinder 303 preferably has only one dressing 436 extending over the effective length, or substantially over the entire width of the web B, B' to be imprinted, and substantially extending (except for a joint, or a channel opening) over the entire circumference of the transfer cylinder 303. Preferably the dressing 436 is designed as a so-called metal printing blanket 436, which has

an elastic layer (for example rubber) on a substantially dimensionally stable support layer, for example a thin metal plate. The ends of this dressing 436 are passed through an opening 437 in the shell face into the channel and are maintained there in a frictionally or positively connected way. In the case of a metal printing blanket 436, the ends are bent/beveled off (for example in the area of its leading end by approximately 45°, and in the area of its trailing end by approximately 135°, or by an intermediate angle of 45°). These ends extend through the opening 437 of a channel extending axially over the entire useful width of the transfer cylinder 303, which also has for example an arresting device 438, a clamping and/or gripping device 438, in particular corresponding substantially to the clamping device 410 represented in Fig. 9 of the forme cylinder 304. However, in the representation of Figs. 8 and 9, the printing forme 410 corresponds for example to the dimensionally stable support layer of the dressing 436 embodied as metal printing blanket 436 wherein, however, an elastic layer on the effective outer surface is not represented in Fig. 9. In the area of the shell face, the opening 437 to the channel preferably has a width in the circumferential direction of the cylinder 304 of preferably 1 to 5 mm, in particular less than or equal to 3 mm. The clamping device 438 is preferably pneumatically operable, for example embodied in the form of one or several pneumatically actuable levers 442 which, in the closed position are prestressed by means of a spring force against the trailing end extending into the channel. A hose 444, which can be charged with a pressure medium, can preferably be employed as the actuating means 444.

The transfer cylinder 303 preferably has a single dressing 436 embodied as a printing blanket 436 which - regardless of the presence of a washing device 434 or the special design of a clamping device 438 - substantially extends over the entire width of the web B, B' to be imprinted, and substantially (except for a joint or a channel opening) over the entire circumference of the transfer cylinder 303, and which has the corresponding dimensions.

List of Reference Symbols

100	Unit, roll unwinding device, roll changer
200	Unit, draw-in unit
300	Unit, printing unit, double-printing group, I-printing group
301	Printing group, offset printing group
302	Roller,
303	Cylinder, printing group cylinder, transfer cylinder
304	Cylinder, printing group cylinder, forme cylinder
305	Inking system
306	Dampening system
307	-
308	Guide element
309	-
310	-
311	Ink fountain
312	Actuating device
313	Roller, duct roller
314	Roller, film roller
315	Roller, inking roller
316	Roller, distribution cylinder
317	Roller, inking roller
318	Roller, inking roller
319	Roller, inking roller
320	Roller, inking roller
321	Roller, distribution cylinder

322	Roller, application roller
323	Roller, application roller
324	Roller, distribution roller
325	Roller, application roller
326	Roller
327	Roller
328	Roller, application roller
329	Roller, distribution roller, chromium roller
330	Roller, dipping roller
331	-
332	Dampening agent supply
333	Removal device
334	-
335	Drip plate
336	Device for affecting the fan-out effect
400	Unit, varnishing unit
401	Device for the semi- or fully automatic plate guidance
402	Contact pressure device, semi-automatic changer, semi-automatic device
403	Storage device, magazine
404	Cross beam
405	Printing forme, printing plate
406	Roller
407	Drive mechanism, actuating means, hollow body, hose
408	Protective device
409	Drive mechanism, hollow body, hose
410	Clamping and/or gripping device
411	Opening

412 Roller
413 Drive mechanism
414 Flap
415 Stop
416 Drive mechanism
417 Chute, feeding chute
418 Chute, receiving chute
419 Transport means, carriage
420 Feeler
421 Holding means, clamping device
422 Holding means, clamping device
423 Brush
424 Drive mechanism, electric motor
425 Passage, passage opening
426 Belt drive
427 End area
428 Holding means, clamping device
429 Holding means, clamping device
430 Spring element, spring steel sheet
431 Drive mechanism, cylinder
432 Holder
433 -
434 Washing device
435 Bearing block
436 Dressing, metal printing blanket, printing blanket
437 Opening
438 Arresting device, clamping and/or gripping device
439 End, leading

440	-
441	End, trailing
442	Lever
443	Spring
444	Actuating means, hose
445	Feed
500	Unit, dryer
600	Unit, cooling unit
700	Unit, superstructure
800	Unit, folding apparatus
900	Unit, transverse cutter, plano delivery device
a	Section length
s	Length
b	Width (B)
b'	Width (B')
B	Web, paper web
B'	Web, paper web
T	Transport direction
D403	Pivot point
D408	Rotating point

alpha	Intermediate angle
beta	Intermediate angle
α'	Intermediate angle
ß'	Intermediate angle